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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,016	08/29/2003	Bret Ja Chisholm	126092-1	9675
23413	7590	03/31/2006	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			ANGEBRANDT, MARTIN J	
			ART UNIT	PAPER NUMBER
			1756	
DATE MAILED: 03/31/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/652,016

Applicant(s)

CHISHOLM ET AL.

Examiner

Martin J. Angebranndt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/4/05 & 11/06/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 19-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-18 and 19-23 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/4/05 &amp; 11/06/03</u> . | 6) <input type="checkbox"/> Other: _____  |

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-18, drawn to a method of exposing a resorcinol arylate polyesters to 29-0400 nm light at a power of 1-20 mW/cm<sup>2</sup>, classified in class 430, subclass 269.
  - II. Claims 19-23, drawn to imaged articles in resorcinol arylate polyesters, classified in class 430, subclass 9.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions group I and group II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the imaged articles are the result of Fries molecular rearrangement, which may be facilitated by irradiation using other wavelengths and/or powers and also the claimed process does not require a pattern to be formed, as it embraces uniform exposures
3. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.
5. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

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6. During a telephone conversation with David E. Rodrigues (50,604) on March 15, 2006 a provisional election was made without traverse to prosecute the invention of group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for data storage by irradiating a provided film or sheet of the organic polymer, does not reasonably provide enablement for irradiation of the polymer in other shapes or in solution. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

Adding a providing step describing the polymer as a film or sheet and irradiating a portion of the sheet or film. Currently the steps do not match the preamble as only the

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recording information is recited, no making steps of the medium are actually recited in the body of the claim.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-7,10,11,13,14 and 16-18 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Webb et al. '997.

The weatherability testing uses a xenon arc lamps with an irradiance of  $0.77 \text{ W/m}^2$  ( $0.077 \text{ mW/cm}^2$ ) at 340 nm of films formed to a thickness of 60 microns. The exposure time was 160 minutes and a uniform exposure. See data in table 2. The Fries rearrangement of these materials is disclosed. (col 1).

13. Claims 1-8,10,11,13,14 and 16-18 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Siclovan et al. '270.

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The weatherability testing uses a xenon arc lamps with an irradiance of  $0.77 \text{ W/m}^2$  ( $0.077 \text{ mW/cm}^2$ ) at 340 nm of films formed into a film. The exposure time was 160 minutes and a uniform exposure. See data in table 10.

14. Claims 1-8,10-14 and 16-18 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Siclovan et al. '253.

The weatherability testing uses a xenon arc lamps with an irradiance of  $0.77 \text{ W/m}^2$  ( $0.077 \text{ mW/cm}^2$ ) at 340 nm of films formed into a film. The films are 25.4 microns thick and formed on a glass substrate. See data in table I. . The Fries rearrangement of these materials is disclosed. (col 1).

15. Claims 1-7,9-14 and 16-18 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) specifies on page 3265, that the polyesters are formed as films on substrates, that the low intensity exposures with the 100 W lamp have an irradiance of  $0.71 \text{ mW/cm}^2$  between 200 and 400 nm and the high intensity exposures using the 450 W lamp have an irradiance of  $13 \text{ mW/cm}^2$  between 200 and 400 nm. (As the range of interest in the claims is 290-400, the irradiance in this region for the high intensity exposure is about  $7 \text{ mW/cm}^2$ .) The use of polymers including resorcinol is disclosed. (structure II on page 3266). Polyester 17 on page 3267 is embraced by formula XII in claim 2. (see also table IIB on page 3272) The rearranements of the polymers is disclosed on page 3264 (middle paragraph) and on pages 3280-3293. Figure 3 on page 3282 describes a resorcinol-iso/terephthalate polymer with a thickness of

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0.4 mil. (10.16 microns) and similarly figure 6 shows the same for resorcinol-diphenolic acid-butylester-iso/terephthalate. Note also the data in figure 7 showing the effects of continued exposure as well as the data for the other polymers including polyester 17. Clearly from figure 7, the onset of the rearrangement begins almost immediately and does not begin to slow until nearly 20 minutes of exposure has taken place. (7 mW times 20 (min) times 60 (sec/min) yields a total exposure of about 8500 mJ/cm<sup>2</sup>).

16. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillberg-Laforce et al., '223, in view of Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

Gillberg-Laforce et al., '223 teaches the formation of holograms using polymers undergoing photo induced fries rearrangements to form patterns of refractive index modulations. The use of polymers containing isophthahlates is disclosed in column 3. The sensitivity of these is in the 200-500 nm range and the refractive index modulations can be up to 0.05. The use of films of thicknesses of 0.5-20 microns is disclosed. (3/57-4/2). The use of exposures of 100mJ/cm<sup>2</sup> is disclosed. The use of lasers is disclosed (4/7-17) and the use of contact exposure through a grating mask with light in the 254-315 nm range is disclosed in example II. In example 1, the 1000 mJ/cm<sup>2</sup> appear to be delivered over 75 seconds (the longest time period in the table in column 5), which results in an exposure at 13.3 mW/cm<sup>2</sup>. (Within the range 290-315, the exposure would be about 7.5 mW/cm<sup>2</sup>.) and results is a refractive index change in a the Durel polymer. Example IV, the uses 25 mW of the 300 nm output of an argon ion laser in a two minute exposure to produce a grating in Durel.

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It would have been obvious to one skilled in the art to modify the teachings of Gillberg-Laforce et al., '223 by using other materials known to undergo Fries rearrangements under the influence of low intensity UV exposure such as the resorcinol polyesters disclosed by Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) with a reasonable expectation of forming a holographic image which does not yellow/discolor.

17. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillberg-Laforce et al., '223, in view of either of (Webb et al. '997 or Siclovan et al. '270) combined with Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971).

It would have been obvious to one skilled in the art to modify the teachings of Gillberg-Laforce et al., '223 by using other materials known to undergo Fries rearrangements under the influence of low intensity UV exposure such as the resorcinol polyesters disclosed by either Webb et al. '997 or Siclovan et al. '270 with a reasonable expectation of forming a holographic image which does not yellow/discolor based upon resorcinol arylenes being known to undergo Fries rearrangements under the influence of low intensity UV exposure as evidenced by Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971)

18. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillberg-Laforce et al., '223, in view of either of (Webb et al. '997 or Siclovan et al. '270) combined with Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971), further in view of Kuwayama et al. JP 63-287986.

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Kuwayama et al. JP 63-287986 teaches that to prevent yellowing of holograms a UV protective coating can be used.

In addition to the basis above, the hologram recording layer resulting from the combination Gillberg-Laforce et al., '223, in view of either of (Webb et al. '997 or Siclovan et al. '270) combined with Cohen et al. "Transparent ultraviolet-barrier coatings", J. Polymer Sci. Pt A-1 Vol. 9 pp. 3263-3299 (1971) is known to resistant to yellowing, so there would be no need to add and additional layer to prevent yellowing as is known in the holographic arts.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Debergalis '431 teaches resorcinol monobenzoate as a UV stabilizer precursor and the ability of these to undergo a photoinduced Fries rearrangement to form the UV stabilizing dihydroxybenzophenone.

Young et al. '961 (example II and IV), Wei et al. '594 Shakhnovich '058 (example 1) and Shakhnovich '620 (example 1) teach resorcinol based polymers and exposure of them.

Korshak et al., "Synthesis and properties of self protecting polyarylates", J. Polymer. Sci. Pt A-1 Vol. 7 pp. 157-172 (1969) and Wright et al. "gas sorption and transport ..." J. Membrane Sci. Vol. 124 pp 161-174 (1997) teach polyarylates undergoing Fries rearrangements.

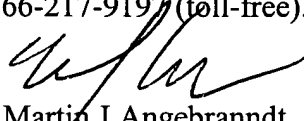
IES lighting handbook, fifth Ed. (1972) pp. 8-42 shows the spectrum of Xenon lamps.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J Angebranndt  
Primary Examiner  
Art Unit 1756

03/16/2006